Interspecific *Lobelia* Plant

Related Application Information

This application claims priority from U.S. Application No. 60/192,728, filed on March 27, 2000.

Field of Invention

This invention relates to a novel interspecific *Lobelia* plant. The *Lobelia* plant of the present invention was developed through a unique interspecific cross between *Lobelia erinus* and *Lobelia valida.*

This invention also relates to interspecific *Lobelia* seed, interspecific *Lobelia* plants, interspecific *Lobelia* varieties and interspecific *Lobelia* hybrids.

In addition, the present invention also relates to methods for producing interspecific *Lobelia* varieties using *Lobelia erinus* and *Lobelia valida* in breeding as either female or male parents, in order to produce novel types and varieties of interspecific *Lobelia* plants. The present invention also relates to a F_1 hybrid or later generation interspecific *Lobelia* plant grown from the interspecific hybrid seed produced by the aforementioned methods.

Background of Invention

The genus *Lobelia* includes approximately 375 species of annuals, perennials, shrubs or sometimes trees, native mostly to tropical and warm temperate regions. Irregular tubular flowers and an acrid, milky latex characterizes them. Several herbaceous species are popular in flower gardens and thrive in moist, shady and semi-shady locations. Within the genus, foliage color ranges from light green to bronze green and bronze red and habits from trailing to upright. Flower color ranges from blue, violet, red, yellow or white and is often bicolor (*Hortus Third A Concise Dictionary of Plants Cultivated in the United States and Canada*, MacMillan Publishing Company (1976)).

Cultivated species include: *Lobelia erinus*, a small annual herb, native to southern Africa that bears blue or violet flowers; *Lobelia cardinalis*, a tall, perennial herb commonly called cardinal flower bearing vertical clusters of large, crimson flowers; *Lobelia siphilitica*, the commonly called blue cardinal flower; *Lobelia splendens*, commonly known Mexican Lobelia, similar to *Lobelia cardinalis* with the major difference being bronze leaves; and *Lobelia inflata*, known for production of the alkaloid lobeline, used medicinally *Id.*

Many popular cultivars, including 'Bees Flame' and the Fan Series, have been produced from interspecific hybridization of *Lobelia splendens*, *Lobelia cardinalis*, or *Lobelia siphilitica*. Collectively these hybrids are known as *Lobelia x hybrida*. *Lobelia x Gerardii*, a hybrid resulting from a cross *between L. x* 'Queen Victoria' and *L. siphilitica*, produces flowers that are often larger than other *Lobelia* species in a range of colors from pink to violet purple (*Ball Perennial Manual Propagation and Production*, Ball Publishing (1996)).

Interspecific hybrids identified as *L.* x *speciosa* are the result of crossing *Lobelia siphilitica* and *Lobelia cardinalis*. These hybrids whether naturally occurring or artifical show many intermediate morphological characteristics of the two parents. Many tetraploid hybrids of *L.* x *speciosa* have been produced through intercrossing spontaneous tetraploids and/or those produced using colchicine treatments (W. Bowden. *Canadian Journal of Botany* 60: 2054-2070 (1982)).

Summary of Invention

The present invention relates to an interspecific *Lobelia* plant. The interspecific *Lobelia* plant of the present invention has a pedigree which includes BFP-100 or derivatives thereof.

The present invention also relates to seed, pollen, cuttings and ovules of the interspecific *Lobelia* plant of the present invention. Moreover, the present invention also relates to a tissue culture comprising regenerable cells of the interspecific *Lobelia* plant of the present invention.

Additionally, the present invention relates to interspecific *Lobelia* seed. The seed of the present invention has a pedigree, which includes BFP-100. The present invention also relates to an interspecific *Lobelia* plant produced by growing the seed of the present invention.

The present invention also relates to a *Lobelia* plant having a lineage, which includes Lobelia plant, BFP-100 and which exhibits heat tolerance and sky-blue flowers with white centers and initial upright growth followed by a semi-trailing habit.

The present invention also relates to a method for crossing *Lobelia erinus* and *Lobelia valida*. The method involves crossing pollen from a first parent *Lobelia* plant to a second parent *Lobelia* plant and harvesting the resultant first generation (F_1) hybrid *Lobelia* seed. The parent *Lobelia* plants used in said method must be a *Lobelia erinus* and *Lobelia valida*. Additionally, the present invention relates to a first generation (F_1) hybrid plant produced by growing the hybrid seed produced by said method.

Brief Description of the Figures

The file of this patent contains at least one drawing executed in color. Copies of this patent with color drawing(s) will be provided by the Patent and Trademark Office upon request and payment of the necessary fee.

Figure 1 shows a photograph of a *Lobelia erinus* x *Lobelia valida* hybrid named BFP-100 of the present invention in a garden location.

Figure 2 shows a photograph of *Lobelia erinus*, the female parent, *Lobelia valida*, the male parent, and the *Lobelia erinus* x *Lobelia valida* hybrid named BFP-100 of the present invention.

Detailed Description of the Invention

The interspecific *Lobelia* plant of the present invention was developed through a unique interspecific cross between *Lobelia erinus* and *Lobelia valida*.

This previously unknown interspecific *Lobelia* was discovered as a result of breeding and research efforts which were conducted at Arroyo Grande, California. In 1997, a cross was made using *Lobelia erinus* Palace Series Blue With Eye as the female parent (commercially available from Ball Seed Company, 622 Town Road, West Chicago, IL 60185). This species exhibits dark purple-blue flowers with white centers or "eyes" and the habit is semi-trailing. The male parent was *Lobelia valida* (purchased from Silverhill Seeds, P.O. Box 53108, Kenilworth, 7745 Cape Town, South Africa). This is an upright species with lavender-blue flowers. In 1997, the resulting F_1 seed was collected and germinated. From the flowering progeny, a plant identified as BFP-100 was selected.

Interspecific *Lobelia* plant BFP-100 possesses a number of unique characteristics which are intermediate between the two parents including: sky-blue flowers with white centers or "eyes", initial upright growth followed by a semi-trailing habit, and shape and size of foliage and stems. In addition, the interspecific hybrid is heat tolerant, more vigorous and profusely flowering than either parent.

Selection BFP-100 has not been observed under all possible environmental conditions. The phenotype may vary significantly with variations such as temperature, light intensity and daylength, without, however, any variance in genotype.

The interspecific *Lobelia* plant of the present invention is genetically stable and can be stably reproduced by means of asexual propagation. Cuttings for asexual propagation can be taken at any time of the year and no special hormones or soil mixtures are required. It is expected that any interspecific *Lobelia* can be produced commercially through asexual propagation.

While the interspecific *Lobelia* plant of the present invention is not sterile it maintains low fertility and can thus be employed as a female and/or male parent in traditional breeding. Methods for overcoming interspecific hybrid sterility barriers are known in the art and include,

but are not limited to, colchicine treatments, random assortive mating and naturally developing pollen fertility.

The following examples are set forth as representations of specific and preferred embodiments of the present invention. These examples are not to be construed as limiting the scope of the invention in any manner. It should be understood that many variations and modifications can be made while remaining within the spirit and scope of the invention.

Example 1: Detailed Description of *Lobelia erinus* x *Lobelia valida* Hybrid Named BFP-100 and Comparison with Cultivar 'Azuro'

The color chart used in the identification of colors described herein is the R.H.S. Colour Chart of The Royal Horticultural Society, London, England. The color values were determined on March 13, 2000 in West Chicago, IL. The readings were taken between 1:00 p.m. and 1:45 p.m. under approximately 2500 footcandles of light.

The plants were produced from cuttings taken from stock plants and were grown under greenhouse conditions comparable to those used in commercial practice while utilizing a soilless growth medium and maintaining temperatures of approximately 72°F during the day and approximately 65°F during the night. 'Azuro' is commercially available from Jungpflanzer-Hiller KG, Kirchheimer Str. 70-74, 73295 Weilheim-Teck, Germany. 'Azuro' is also the subject of U.S. Plant Patent No. 10,758.

CHARACTERISTIC	NEW VARIETY BFP100	COMPARISON VARIETY Azuro
Plant form	Upright to trailing	Upright, mounded
Lateral branch diameter	2mm	2mm
Internode length	3.3cm	3-5cm
Stem texture	Smooth	Same
Leaf arrangement	Alternate	Same
Upper leaf shape	Linear	Same
Upper leaf length	2.7cm	Same
Upper leaf width	.5cm	.6cm
Upper leaf apex	Rounded	Acute
Upper leaf base	Attenuate/sessile	Same
Upper leaf margin	Remotely serrate	Same
Upper leaf texture	Smooth	Same
Upper leaf aspect	Flat	Same
Upper leaf color-upper surface	137A	Same
Upper leaf color-lower surface	137B	147B
Lower leaf shape	Spatulate/obovate	Same
Lower leaf length	5cm	Same
Lower leaf width	1.3cm	1.8cm
Lower leaf apex	Sharply acuminate	Same
Lower leaf base	Attenuate/sessile	Same
Lower leaf margin	Closely serrate	Same
Lower leaf texture	Smooth	Same
Lower leaf aspect	Flat	Same
Lower leaf color-upper surface	137B	137A
Lower leaf color-lower surface	137C	147B
Flowering habit	Continual; l/axil	Same
Flower bud length	1.1cm	1cm
Flower bud shape	Tubular	Same
Flower bud diameter	3mm	2mm
Flower shape	Labiate	Tubular
Flower Type	2 lipped	Same
Flower diameter	1.6cm	2cm
Flower length	1.8cm	Same
Flower arrangement	Single/ in loose racemes	Same
Petal quantity	5- 2 upper; 3 lower	Same
Upper petal length	8mm	7.5mm
Upper petal width	3mm	5mm
Lower petal length	1cm	5mm
Lower petal width	6mm	2mm
Petal apex	Cuspidate	Same
Petal margin	Entire	Same
Petal texture	Smooth, dull	Smooth, satiny
Flower color		
Upper surface of upper petals	99C	Between 96B and 96C with spot of close to 89A at base
Lower surface of upper petals	96C	97A
	Lower petals are fused along 1/2 of their length	
Middle lower petal	White from base to outer 1/3. Outer	Between 96B and 96C

	1/3 (margin) is 99C	
Lateral lower petals	White along inner 1/2 from base to outer 1/3. Outer edge and tip are 99C Yellow spots between 154A & 1A appear at base where petals are joined	Between 96B and 96C
Throat color-outside	White with streaks of 96D	White
Throat color-inside	White with streaks of 96B	White with spot of 89A
Calyx length	8mm	9mm
Calyx diameter	2mm	Same
Calyx apex	Acuminate	Same
Calyx margin	Entire	Same
Calyx texture	Smooth	Same
Calyx color	137C	146A
Sepal arrangement	Lower 1/2 fused	Same
Sepal shape	Thin, linear	Same
Sepal length	1.2cm	9mm
Sepal width	1mm	Same
Sepal quantity	5	Same
Anther length	2mm	Same
Anther color	103B	Whitish purple
Pistil length	9mm	9mm
Ovary color	144A	Same
Pedicle length	2cm	
Pedicle diameter	.5mm	
Pedicle color	141B	144A
Pedicle surface	Smooth	Same
Stamen number	5	Same
Stamen length	8mm	
Stamen color	100D	
Stigma lobes	2	
Stigma shape	Round	Same
Stigma color	89A	Purple
Style color	144A	Green

Deposit Information

Two thousand five hundred (2500) seeds of *Lobelia valida* have been placed on deposit with the American Type Culture Collection (ATCC), 10801 University Blvd., Manassas, Virginia, 20110-2209 under Deposit Accession Number_____ on _____. This deposit was made in compliance with the Budapest Treaty requirements that the duration of the deposit should be for thirty (30) years from the date of the deposit or for five (5) years after the last request for the deposit at the depository or for the enforceable life of a U.S. Patent that matures from this application, whichever is longer. These *Lobelia* seeds will be replenished should it become non-viable at the depository.

All references cited herein are hereby incorporated by reference.

The present invention is illustrated by way of the foregoing description and examples. The foregoing description is intended as a non-limiting illustration, since many variations will become apparent to those skilled in the art in view thereof. It is intended that all such variations within the scope and spirit of the appended claims be embraced thereby.

Changes can be made to the composition, operation and arrangement of the method of the present invention described herein without departing from the concept and scope of the invention as defined in the following claims.